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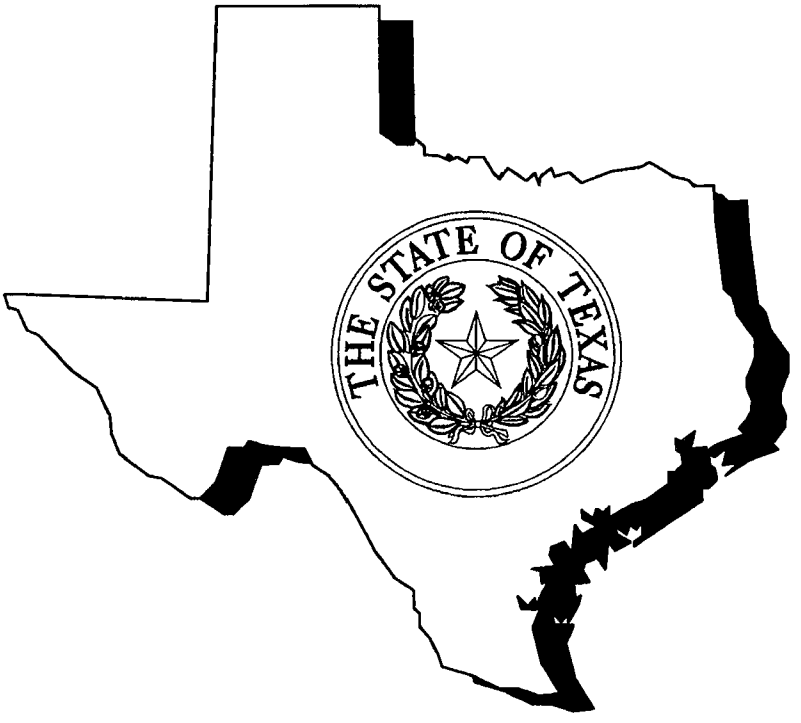
Addendum StartPage: 0

SOAH DOCKET NO. 473-19-1265
PUC DOCKET NO. 48785

JOINT APPLICATION OF ONCOR ELECTRIC DELIVERY COMPANY LLC, AEP TEXAS, INC., AND LCRA TRANSMISSION SERVICES CORPORATION TO AMEND THEIR CERTIFICATES OF CONVENIENCE AND NECESSITY FOR 345-KV TRANSMISSION LINES IN PECOS, REEVES AND WARD COUNTIES, TEXAS (SAND LAKE TO SOLSTICE AND BAKERSFIELD TO SOLSTICE)	§ § § § § § § § § §	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**



DIRECT TESTIMONY OF

BLAKE P. IANNI

INFRASTRUCTURE AND RELIABILITY DIVISION

PUBLIC UTILITY COMMISSION OF TEXAS

January 30, 2019

TABLE OF CONTENTS

ATTACHMENTS

BPI-1 Qualifications of Blake P. Ianni

BPI-2 List of Dockets Containing Testimony of Blake P. Ianni

BPI-3 Culberson Loop Map (Att. BRK-2 in Application)

BPI-4 TPWD Letter to Karen Hubbard, December 14, 2018

I. STATEMENT OF QUALIFICATIONS

Q. Please state your name, occupation and business address.

A. My name is Blake P. Ianni. I am employed by the Public Utility Commission of Texas (Commission) as an Engineering Specialist in the Infrastructure and Reliability Division. My business address is 1701 North Congress Avenue, Austin, Texas 78701.

Q. Please briefly outline your educational and professional background.

A. I have a Bachelor of Science degree in Petroleum Engineering and a Master of Business Administration degree with a concentration in Engineering and Technology. Prior to graduate school, I worked as an engineer for an energy service company. I have been employed by the Commission since December 2016. A more detailed summary of my experience is provided in Attachment BPI-1.

Q. Are you a registered professional engineer?

A. No, I am an Engineer in Training (EIT), and my Texas EIT certification number is 59094.

Q. Have you previously filed testimony before the Commission?

A. Yes. A list of the dockets in which I have testified is provided as Attachment BPI-2.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present my recommendations regarding the Bakersfield to Solstice portion of the Joint Application, specifically the AEP Texas Inc. (AEP) and LCRA portion of the proposed project. On November 7, 2018, LCRA Transmission Services Corporation (LCRA TSC) and AEP (collectively referred to as "the Applicants" in my testimony) filed a joint CCN

application for a double-circuit 345-kV transmission line in Pecos County, under Docket No. 48787. On November 15, 2018, the State Office of Administrative Hearings granted a motion to consolidate this docket with Docket No. 48785, which is a Joint Application of Oncor Electric Delivery Company LLC (Oncor) and AEP to amend their CCNs for the proposed Sand Lake to Solstice 345-kV transmission line in Pecos, Reeves, and Ward Counties.

My testimony here concerns the LCRA and AEP part of the consolidated docket, which as aforementioned, is the proposed 345-kV line from Bakersfield to Solstice. Staff engineer David Bautista in his filed testimony addresses the Oncor and AEP portion of the application, which is the Sand Lake to Solstice transmission line.

LCRA and AEP proposed the Bakersfield to Solstice portion of the consolidated docket to amend their Certificates of Convenience and Necessity (CCN) to construct an approximately 68 to 92 mile, double-circuit, 345-kV transmission line in Pecos County.[1] This proposed transmission line will connect LCRA's existing Bakersfield substation in the east region of the study area to AEP's existing Solstice Switch station in the west region of the study area. The Bakersfield substation is currently 345-kV, while the Solstice Station is 138-kV and would be expanded to 345-kV as part of the project. The project will be referred to as the "Bakersfield-Solstice Line" or "Proposed Project" in my testimony.

[1] Application Question 6.

Q. What are the statutory requirements that a utility must meet to amend its CCN to construct a new transmission line?

A. Section 37.056 of the Public Utility Regulatory Act[2] (PURA) states that the Commission may approve such an application only if the Commission finds that the new transmission line is necessary for the service, accommodation, convenience, or safety of the public. Further, the Commission shall approve, deny, or modify a request for a transmission line after considering the factors specified in PURA § 37.056(c), which are as follows:

(1) the adequacy of existing service;

(2) the need for additional service;

(3) the effect of granting the certificate on the recipient of the certificate and any electric utility serving the proximate area; and

(4) other factors, such as:

(A) community values;

(B) recreational and park areas;

(C) historical and aesthetic values;

(D) environmental integrity;

(E) the probable improvement of service or lowering of cost to consumers in the area if the certificate is granted; and

(F) to the extent applicable, the effect of granting the certificate on the ability of this state to meet the goal established by Section 39.904(a) of this title.

[2] Public Utility Regulatory Act, Tex. Util. Code Ann. §§ 11.001-66.016 (PURA).

Q. Do the Commission's rules provide any instruction regarding routing criteria?

A. Yes, 16 Texas Administrative Code (TAC) § 25.101(b)(3)(B) requires that an application for a new transmission line address the criteria in PURA § 37.056(c), and, considering those criteria, engineering constraints, and costs, the line shall be routed to the extent reasonable to moderate the impact on the affected community and landowners unless grid reliability and security dictate otherwise. The following factors shall be considered in the selection of the utility's recommended and alternate routes:

(i) whether the routes parallel or utilize existing compatible rights-of-way for electric facilities, including the use of vacant positions on existing multiple-circuit transmission lines;

(ii) whether the routes parallel or utilize other existing compatible rights-of-way, including roads, highways, railroads, or telephone utility rights-of-way;

(iii) whether the routes parallel property lines or other natural or cultural features; and

(iv) whether the routes conform with the policy of prudent avoidance.[3]

Q. What issues identified by the Commission must be addressed in this docket?

A. In the Order of Referral and Preliminary Order filed on November 14, 2018 in this docket,[4] the Commission identified eight issues that must be addressed:

1. Is LCRA Transmission Services Corporation and AEP's application to amend their respective CCNs adequate? Does the application contain an adequate number of reasonably differentiated alternative routes to conduct a proper evaluation? In answering this question, consideration must be given to the number of proposed alternatives, the locations of the proposed transmission line, and any associated proposed facilities that influence the

[3] 16 TAC §§ 25.101(b)(3)(B)(i)-(iv).
[4] Filed in Docket No. 48787 prior to consolidation into 48785.

location of the line. Consideration may also be given to the facts and circumstances specific to the geographic area under consideration, and to any analysis and reasoned justification presented for a limited number of alternative routes. A limited number of alternative routes is not in itself a sufficient basis for finding an application inadequate when the facts and circumstances or a reasoned justification demonstrates a reasonable basis for presenting a limited number of alternatives. If an adequate number of routes is not presented in the application, the ALJ shall allow LCRA Transmission Services Corporation and AEP to amend the application and to provide proper notice to affected landowners; if LCRA Transmission Services Corporation and AEP choose not to amend the application, the ALJ may dismiss the case without prejudice.

Need

2. Are the proposed facilities necessary for the service, accommodation, convenience, or safety of the public within the meaning of PURA § 37.056(a) taking into account the factors set out in PURA § 37.056(c)? In addition,

a) How does the proposed facility support the reliability and adequacy of the interconnected transmission system?

b) Does the proposed facility facilitate robust wholesale competition?

c) What recommendation, if any, has an independent organization, as defined in PURA § 39.151, made regarding the proposed facility?

d) Is the proposed facility needed to interconnect a new transmission service customer?

3. Is the transmission project the better option to meet this need when compared to employing distribution facilities? If LCRA Transmission Services Corporation and AEP are not subject to the unbundling requirements of PURA § 39.051, is the project the better option to meet the need when compared to a combination of distributed generation and energy efficiency?

Route

4. Which proposed transmission line route is the best alternative weighing the factors set forth in PURA § 37.056(c) and 16 TAC § 25.101(b)(3)(B)?

5. Are there alternative routes or facilities configurations that would have a less negative impact on landowners? What would be the incremental cost of those routes?

6. If alternative routes or facility configurations are considered due to individual landowner preference:

a) Have the affected landowners made adequate contributions to offset any additional costs associated with the accommodations?

b) Have the accommodations to landowners diminished the electric efficiency of the line or reliability?

Texas Parks and Wildlife Department

7. On or after September 1, 2009, did the Texas Parks and Wildlife Department provide any recommendations or informational comments regarding this application pursuant to Section 12.0011(b) of the Texas Parks and Wildlife Code? If so, please address the following issues:

a) What modifications, if any, should be made to the proposed project as a result of any recommendations or comments?

b) What conditions or limitations, if any, should be included in the final order in this docket as a result of any recommendations or comments?

c) What other disposition, if any, should be made of any recommendations or comments?

d) If any recommendation or comment should not be incorporated in this project or the final order, or should not be acted upon, or is otherwise inappropriate or incorrect in light

of the specific facts and circumstances presented by this application or the law applicable to contested cases, please explain why that is the case.

Other Issues

8. Are the circumstances for this line such that the seven-year limit discussed in Section III of this order should be changed?

Q. Which issues in this proceeding have you addressed in your testimony?

A. I have addressed all eight issues in the Order of Referral and Preliminary Order and the requirements of PURA § 37.056 and 16 TAC § 25.101.

Q. Are there any issues which are not to be addressed in this proceeding?

A. Yes. Per the Preliminary Order, the following issue is not to be addressed: What is the appropriate compensation for right-of-way or condemnation of property?

Q. What have you relied upon or considered to reach your conclusions and make your recommendations?

A. I have reviewed and analyzed the application and its attachments, including, but not limited to, the Environmental Assessment and Alternative Route Analysis (EA) prepared by Power Engineers for the Applicants. Additionally, I have relied upon the direct testimonies and statements of position filed in this proceeding by the Applicants and the intervenors, other filed responses, requests for information (RFIs), and comments from the Texas Parks and Wildlife Department (TPWD).[5]

[5] Attachment BPI-4 is TPWD's letter to Karen Hubbard filed December 20, 2018.

III. SUMMARY OF RECOMMENDATIONS

Q. Within the scope of your evaluation, what conclusions have you made about the application to build the proposed transmission line?

A. I conclude the following:

1. The application is adequate.
2. The proposed facilities are necessary for the service, accommodation, convenience, or safety of the public within the meaning of PURA § 37.056(a) and taking into account the factors set out in PURA § 37.056(c).
3. The proposed transmission project is the best option to meet this need.
4. LCRA and AEP have complied with 16 TAC § 25.101 with this filing.
5. Route 24 is the best project alternative when weighing, as a whole, the factors set forth in PURA § 37.056(c), the factors found in 16 TAC § 25.101, and issues identified in the Order of Referral and Preliminary Order.
6. I conclude that the concerns TPWD discussed in its letter regarding the Proposed Project are sufficiently addressed by the mitigation measures provided in items 2, 3, 4, and 7 on pages 11-12 of my testimony. I also conclude that LCRA and AEP have the resources and procedures in place to accommodate the recommendations and comments of TPWD.

Q. What recommendations do you have regarding this application?

A. I recommend that the Commission approve the Applicants' Joint Application for a CCN to construct a new 345-kV transmission line to connect the existing Bakersfield Substation to the existing Solstice Substation located in Pecos County. From my analysis, I recommend that the

Commission order LCRA and AEP to construct the Proposed Project on Route 24, which is composed of the following segments: A-C-D-E-F-M-R-W-X-Y. Additionally, I recommend that the Commission order LCRA and AEP to comply with the reporting requirements of 16 TAC §25.83 and that the Commission include the following paragraphs in its final order to mitigate the impact of the Proposed Project:

1. In the event that the Applicants or their contractors encounter any archeological artifacts or other cultural resources during project construction, work shall cease immediately in the vicinity of the resource and the discovery shall be reported to the Texas Historical Commission (THC). The Applicants shall take action as directed by the THC.
2. The Applicants shall follow the procedures described in the following publications for protecting raptors: *Suggested Practices for Raptor Protection on Power Lines: The State of the Art, Avian Power Line Interaction Committee* (APLIC 2006), *the Avian Protection Plan Guidelines* (APLIC 2005), and *Reducing Avian Collisions with Power Lines: State of the Art* (APLIC 2012).
3. The Applicants shall exercise extreme care to avoid affecting non-targeted vegetation or animal life when using chemical herbicides to control vegetation within the right-of-way (ROW) and such herbicide shall comply with rules and guidelines established in the Federal Insecticide, Fungicide and Rodenticide Act and with Texas Department of Agriculture regulations.
4. The Applicants shall minimize the amount of flora and fauna disturbed during construction of the proposed transmission project, except to the extent necessary to establish appropriate ROW clearance for the transmission line. In addition, the Applicants shall revegetate using native species and shall consider landowner preferences in doing so. Furthermore, to the maximum extent practicable, the Applicants shall avoid adverse environmental impacts to

sensitive plant and animal species and their habitats as identified by TPWD and the United States Fish and Wildlife Service (USFWS).

5. The Applicants shall implement erosion control measures as appropriate. Also, the Applicants shall return each affected landowner's property to its original contours and grades unless otherwise agreed to by the landowner. The Applicants shall not be required to restore original contours and grades where different contour or grade is necessary to ensure the safety or stability of the project's structures or the safe operation and maintenance of the line.

6. The Applicants shall cooperate with directly affected landowners to implement minor deviations in the approved route to minimize the impact of the transmission line. Any minor deviation to the approved route shall only directly affect landowners that received notice of the transmission line under 16 TAC § 22.52(a)(3) and that have agreed to the minor deviation.

7. The Applicants shall use best management practices to minimize the potential impact to migratory birds and threatened or endangered species.

8. The Applicants shall conduct surveys to identify pipelines that could be affected by the proposed transmission line, and coordinate with pipeline owners in modeling and analyzing potential hazards because of alternating-current interference affecting pipelines being paralleled.

Q. Does your recommended route differ from the one the Applicants identified as best addressing the requirements of PURA and the Commission's substantive rules in the original application?

A. No. The Applicants recommended Route 24 in the Joint Application and based on my analysis, I conclude that this route best addresses the requirements of PURA, the Commission's substantive rules, and the Preliminary Order. I explain my recommendation later in my testimony.

IV. PROJECT JUSTIFICATION

A. DESCRIPTION OF THE PROJECT

Q. Please describe the Proposed Project.

A. As previously mentioned, the project proposed by the Applicants consists of a new double-circuit, 345-kV transmission line that would span from 68 to 92 miles to connect the existing Bakersfield Substation to the existing Solstice Substation. The double-circuit structures would necessitate a 150 feet wide ROW.[6] Route 24 is 71.1 miles long, and the Applicants have not yet acquired the necessary ROW for this project.[7] The table below shows the lengths for each route, organized from shortest to longest.

Route	Route Length (mi)
2	67.8
3	69.4
1	70.7
24	71.1
4	71.1
5	71.7
23	73.4

[6] Application at bates 7 (Question 6).
[7] *Id.* at 7.

6	74.2
11	75.6
7	75.7
22	77
8	77.2
10	78.7
9	78.9
12	80.3
13	81
14	81.1
17	81.4
25	82.4
15	82.5
16	84.1
18	88.3
19	89.3
20	89.9
21	91.8

Q. Does the application contain a number of reasonably differentiated alternative routes sufficient to conduct a proper evaluation?

A. Yes. The Joint Application contains 25 alternative routes which are listed numerically in the application and provide an adequately diverse range of options.

Q. Have any additional routes been proposed?

A. Not to my knowledge.

Q. Is the Proposed Project located within the incorporated boundaries of any municipality?

A. No.[8]

[8] Application at bates pg. 10 (Question 10).

Q. Does any part of this Proposed Project lie within the Texas Coastal Management Program (CMP) boundary?

A. No, the Proposed Project is not located within the CMP boundary, i.e. the Coastal Management Zone.[9]

B. NEED FOR THE PROJECT

Q. Has an independent organization, as defined in PURA § 39.151, determined that there is a need for the Proposed Project?

A. Yes. The Electric Reliability Council of Texas (ERCOT) Regional Planning Group (RPG) reviewed and endorsed the Proposed Project as part of the Far West Texas 2 Project. Additionally, ERCOT's Board of Directors and its Technical Advisory Committee (TAC) both approved the Proposed Project.[10] A proposed 345-kV transmission segment from Riverton to Sand Lake to Solstice was originally included in the Far West Texas proposal, but ERCOT deferred these portions for later analysis once expected load growth on the Culberson Loop reached 717 MW.[11] The Culberson Loop is defined as Oncor's existing Wink—Culberson Switch 138-kV line and the Yucca Drive Switch—Culberson Switch 138-kV line.[12] The map filed in the Joint Application as Attachment BRK-2 to Brent R. Kawakami's Testimony on behalf of the Applicants depicts this loop system and the proposed Bakersfield to Solstice and Solstice to Sand Lake lines, and I have included this map as Attachment BPI-3 to my testimony for reference. When the higher forecasted

[9] *Id.* at Question 28, pg. 34.
[10] Application at Question 14, pp.12-15.
[11] *Id.*
[12] *Id.*

load growth threshold was reached, the proposed lines were re-submitted as part of the Far West Texas 2 Project and were endorsed by ERCOT in mid-2018.[13]

Q. Are the proposed facilities necessary for the service, accommodation, convenience, or safety of the public within the meaning of PURA § 37.056(a) taking into account the factors set out in PURA § 37.056(c)?

A. Yes. Based on the information provided by the Applicants in the application, direct testimony, and RFIs, it is my opinion that there is a need for the line. The Proposed Project addresses increased load growth due to oil and gas production, and related midstream processing and economic expansion in the area.[14] In tandem with the Oncor/AEP Solstice to Sand Lake proposed line, this Proposed Project would allow for bidirectional electric service for the 345-kV source into the Culberson Loop.[15] On June 12, 2018, the ERCOT Board of Directors designated the Proposed Project, along with the Riverton to Sand Lake 345-kV line and the Sand Lake to Solstice 345-kV line, as critical to the reliability of the ERCOT power grid.[16]

C. PROJECT ALTERNATIVES

Q. Did the Applicants investigate or consider distribution or other alternatives to the Proposed Project?

A. Yes. The Applicants determined that distribution alternatives would be inadequate because they would not improve the reliability of the transmission grid system in the area.[17] The Applicants considered upgrading the existing 138-kV transmission lines in the region, but concluded this

[13] *Id.* and Application Attachment 2d.
[14] Application at Question 14, pp. 12-15
[15] *Id.*
[16] Application Attachment 2f. Critical designation as defined by 16 TAC §25.101(b)(3)(D).
[17] Application Question 15, pp. 16-20.

alternative would be impractical since a number of customers are currently being directly served by those lines (upgrading the 138-kV line(s) in the region would require all of those customers and existing substations to be rebuilt as well). Ultimately, a new 345-kV source was deemed necessary, and ERCOT determined that the Proposed Project was the best transmission solution to address the region's near and long-term projected load growth.

Q. Do you agree that the proposed transmission line project is the best option when compared to other alternatives?

A. Yes, I agree that the Proposed Project is the best solution for the needs in the project area.

V. ROUTING

A. STAFF RECOMMENDATION

Q. Which route did the Applicants select as the route that they believe best addresses the requirements of PURA and the Commission's Substantive Rules?

A. In their Joint Application, the Applicants identified Route 24 as being the route that best meets the requirements of PURA and Commission's substantive rules.[18]

Q. What is your route recommendation considering all factors, including the factors set forth in PURA § 37.056(c) and 16 TAC § 25.101(b)(3)(B)?

A. I recommend that Route 24 be approved for the Proposed Project because it is superior with respect to several criteria. The basis for my recommendation is explained in greater detail in the remainder of my testimony.

[18] *Id.* at Question 17, pp. 22-24.

B. COMMUNITY VALUES

Q. Have the Applicants sought input from the local community regarding community values?

A. Yes. As required by 16 TAC § 22.52(a)(1), the Applicants published notice of the Proposed Project in a newspaper in general circulation in the project area, *The Fort Stockton Pioneer*.[19] In addition, pursuant to 16 TAC § 22.52(a)(4), the Applicants also held an open house meeting on July 12, 2018 at the Pecos County Civic Center in Fort Stockton, Texas.[20] A total of 1,440 invitations to the open house were mailed to landowners who have property within 500 feet of the centerline of any of the proposed routes. Additionally, the Applicants provided notice of the public meeting to the Department of Defense Siting Clearinghouse.[21] At this open house meeting, personnel from the Applicants and Power Engineers staffed several information stations about the Applicants and the Proposed Project; these stations included illustrations, aerial photos, and maps.[22] Each attendee was encouraged to explore the different stations, ask questions, and submit any comments through questionnaires that were distributed at the public meeting. A total of 49 individuals signed-in as attending the meeting, and the Applicants received a total of 16 completed questionnaires.[23]

Q. Did members of the community who attended the open house express concerns about the Proposed Project?

A. Yes. Based on the community feedback, the Applicants modified or deleted several segments and proposed several new segments.[24] More details regarding the changes that resulted from the community feedback are found in Sections 3.2.2.2 and 3.3 of the EA in the Applicants' application.

[19] *Id.* at Question 25, pp. 32-33.
[20] *Id.* at Question 18, pp. 25-26.
[21] *Id.*
[22] *Id.*
[23] *Id.*
[24] EA at Section 3.3.

Q. Are there any electronic installations in the study area?

A. Yes, there are 7 communication towers (i.e. FM radio transmitters, microwave towers, etc.) within 2,000 feet of one or more of the alternative routes; specific distances and details regarding these installations are listed in the EA Table 4-29 of the application. Aside from these communications towers, there are no AM radio transmitters within 10,000 feet of the alternative routes.[25] Route 24 is within 2,000 feet of 2 of these transmitters/installations.[26]

Q. Are there any airstrips or heliports located in the study area?

A. Yes, there are three private airstrips within 10,000 feet of the centerline of some of the routes, as well as an FAA-registered airport with a runway greater than 3,200 feet (the Fort Stockton-Pecos County Airport) within 20,000 feet of some of the alternative routes.[27] There are no heliports within the area.[28] Specific details and distances these airstrips are from the alternative routes can be found in Table 4-28 of the EA. For some routes, the transmission line may penetrate the 1:100 horizontal slope[29] near the Fort Stockton Pecos County Airport.[30] Route 24 is not within the designated ranges of any of these airstrips, public or private.[31]

[25] EA at Section 4.2.4.
[26] EA Data Table 4-1.
[27] Application Question 23, p.31.
[28] *Id.*
[29] Exceeding this slope is defined as the transmission structure exceeding one foot in height for each 100 feet in distance from the closest point of the nearest runway.
[30] EA Table 4-28 at p. 4-25 provides more details.
[31] EA Table 4-1.

C. RECREATIONAL AND PARK AREAS

Q. Are any parks or recreational areas located within 1,000 feet of the centerline of any of the alternative routes?

A. Yes, the alternative routes are within this range of zero to three parks and recreational areas.[32] Route 24 is not within 1,000 feet of any of these areas. None of the alternative routes cross any parks or recreational areas.[33]

D. HISTORICAL VALUES

Q. Are there possible impacts from the Proposed Project on archeological and historical values, including known cultural resources that are crossed by any of the alternative routes or that are located within 1,000 feet of the centerline of any of the alternative routes?

A. In total, there are 37 recorded historic/archeological sites within 1,000 feet of the centerline of one or more of the primary alternative routes, and 10 of these sites are crossed by the ROW of the primary alternative routes.[34] More specifically, 32 of the sites are considered prehistoric sites, and two sites are considered both prehistoric and historic sites.[35] All alternative routes cross anywhere from 0 to 5 historic sites, and Route 24 crosses 2 of these sites.[36] Additionally, Route 24 is within 1,000 feet of 2 additional sites and is tied with several other routes for having the least number of

[32] EA at Section 4.2.5, pp. 4-26—4-27.
[33] *Id.* and Application Question 26, pp. 33-34.
[34] Application Question 27, pg. 34.
[35] *Id.*
[36] EA Table 4-1.

historic or archaeological resources within 1,000 feet of their ROW.[37] Specific details regarding these sites are listed in the EA in Table 4-31.

E. AESTHETIC VALUES

Q. What do you consider the aesthetic factors to be as they relate to this case?

A. The Proposed Project is located in a relatively rural area of Pecos County near Fort Stockton, Texas.[38] The land is used mostly for commercial and residential purposes, or for transportation, oil, gas, and wind energy development in particular. In addition, there are some parks and recreational areas and agricultural areas.[39] The region of the proposed project is within the southern part of the High Plains, the northwest part of the Edwards Plateau, and the southeast part of the Basin and Range physiographic region of Texas, and can be characterized as most flat, with playa lakes, dune fields, and box canyons.[40] The elevation in the study area ranges from 2,300 feet to 3,600 feet above mean sea level. In my opinion, the aesthetic factors in this case are the visual impacts on local community residents and persons traveling through the area of the Proposed Project.

[37] *Id.*
[38] Application Question 6, pp. 7-8.
[39] *Id.*
[40] *Id.*

Q. In your opinion, how will the negative impact on aesthetic values of constructing the Proposed Project on Route 24 compare to the negative impact on aesthetic values of constructing the Proposed Project on the other proposed alternative routes?

A. Each alternative route is within the visual foreground zone of parks and recreational areas[41] from 0.0 to 4.3 miles, and Route 24 is tied with several other routes for least amount of route length within this visual foreground (0.0 miles).[42] Similarly, Route 24 is tied with several other routes as having the least amount of ROW within the foreground visual zone of Interstate (IH), US, and state highways, at 4.0 miles. Route 24 is within the visual foreground of FM roads for 12.6 miles, and all routes range from 1.3 to 12.9 miles for this category.[43] Additionally, Route 24 parallels an existing transmission line for much of its route length, which I discuss further in my testimony. In my opinion, the negative impact on aesthetic values of constructing the Proposed Project on Route 24 would be comparable to that of constructing the Proposed Project on any of the other alternative routes.

F. ENVIRONMENTAL INTEGRITY

Q. Please provide a general description of the area traversed by the proposed routes.

A. As aforementioned, the study area is located within Pecos County, and the surrounding land contains a number of residential and commercial developments, especially in the area close to the City of Fort Stockton. Additionally, the land is used for agricultural purposes and for oil, gas, and wind development.[44]

[41] Defined as 0.5 mile unobstructed view.
[42] EA Table 4-1.
[43] *Id.*
[44] EA at 2-41.

Q. Did TPWD express any specific concerns with the Proposed Project?

A. Yes, TPWD filed comments and recommendations via a letter to Karen Hubbard, dated December 14, 2018.[45] TPWD emphasized that care should be taken to mitigate the Proposed Project's potential impacts to migratory birds, federal and state listed threatened or endangered species, and state rare resources.

Q. What route did TPWD recommend?

A. TPWD recommended Route 24.[46]

Q. Why did TPWD recommend Route 24?

A. The main reason that TPWD expressed a preference for this route was because it believes that of the alternative routes, Route 24 best minimizes the impact to fish and wildlife and their habitats. Additionally, it parallels existing transmission lines and existing compatible corridors to a greater extent than other routes. TPWD also states that Route 24 does not cross rivers, University Lands, parks, open waters, or any known habitat for federally-listed threatened or endangered species.[47] Additionally, TPWD stated that Route 24 has the 2nd fewest stream crossings and runs parallel to streams/rivers for only 0.4 miles.[48]

Q. Did TPWD make any additional recommendations?

A. Yes, TPWD recommended avoiding the habitats of the Texas horned lizard, as well as the aquatic and riparian habitats of Leon Creek.[49] Additionally, TPWD recommended that the Applicants be mindful of the habitats of the Black-tailed prairie dog and the Western burrowing owl during the construction process, should they encounter these areas.[50]

[45] Attachment BPI-4 at 4.
[46] *Id.*
[47] *Id.* at 2.
[48] *Id.*
[49] *Id.* at 10.
[50] *Id.* at 15.

Q. Please describe how the Applicants propose to parallel natural or cultural features for the Proposed Project.

A. The proposed alternative routes each parallel rivers, streams or creeks within 100 feet of ROW, for 0.0 to 0.9 miles.[51] Route 24 parallels streams/rivers for 0.4 miles. None of the proposed routes parallel any known cultural features.[52]

Q. What do you conclude regarding the potential environmental impact of Route 24?

A. Based on the information provided by TPWD, Power Engineers in the EA, and the Applicants in the Application, I conclude that Route 24 is preferable from an environmental perspective.

G. PROJECT CONSTRAINTS

Q. Are there any possible engineering constraints associated with this Project?

A. Yes, a possible engineering constraint would occur if a route is ultimately selected that would exceed the aforementioned 1:100 slope near the Fort Stockton Pecos County Airport.[53] If one of these routes is selected by the Commission, the Applicants would need to coordinate with the FAA and potentially implement design changes, including shorter structure designs in some cases.[54] Additionally, the topography and other unique attributes along the chosen route will require engineering consideration. In my opinion, these possible constraints are not severe or uncommon and can be adequately addressed by utilizing design and construction practices and techniques usual and customary in the electric utility industry.

[51] EA Table 4-1.
[52] *Id.*
[53] The routes exceeding this slope are Routes 3, 10, 12, 18, 19, 22 & 23. *See EA* Table 4-28, pg. 4-25.
[54] EA p.1-9.

Q. Are there any special circumstances for this Project that would warrant an extension beyond the seven-year limit for the energization of the line?[55]

A. No, the Applicants have not described any special circumstances that would merit an extension of this time limit.

H. COSTS

Q. What is the estimated cost of constructing the Bakersfield to Solstice 345-kV Transmission Line on each of the proposed routes?

The table below outlines the total cost of the Proposed Project, organized from the least to most expensive route. The estimated costs range from approximately $149 million to $192 million, and the table also details the total length of each route.[56] As shown, Route 24 is the 4th least expensive route at an estimated cost of $155,959,000. This is roughly $7 million, or 4.8%, more expensive than the least expensive route, Route 2.

Route	Total Length (miles)	Estimated Total Cost	Percent Variance over Lowest Cost Route
2	67.8	$ 148,875,000	0.0%
3	69.4	$ 150,383,000	1.0%
4	71.1	$ 153,422,000	3.1%
24	71.1	$ 155,959,000	4.8%
1	70.7	$ 156,478,000	5.1%
5	71.1	$ 158,955,000	6.8%
23	73.4	$ 160,463,000	7.8%
11	75.6	$ 162,551,000	9.2%
22	77	$ 162,849,000	9.4%
6	74.2	$ 165,321,000	11.0%
8	77.2	$ 165,868,000	11.4%
7	75.7	$ 167,383,000	12.4%

[55] *See* Order of Referral and Preliminary Order at bates 00003 (November 14, 2018) (limiting CCN approval to seven years).

[56] Application Attachment 3 and EA Table 4-1.

25	82.4	$	169,275,000	13.7%
9	78.9	$	170,776,000	14.7%
14	81.1	$	170,876,000	14.8%
10	78.7	$	172,190,000	15.7%
12	80.3	$	173,847,000	16.8%
17	81.4	$	175,300,000	17.7%
13	81	$	176,065,000	18.3%
15	82.5	$	177,285,000	19.1%
16	84.1	$	177,846,000	19.5%
21	91.8	$	183,728,000	23.4%
20	89.9	$	186,161,000	25.0%
19	89.3	$	189,165,000	27.1%
18	88.3	$	192,422,000	29.3%

In addition to these estimated total route costs listed, there are also substation upgrade costs for the Proposed Project which are the same for each route. The Bakersfield Substation upgrade costs are estimated to be $6,533,000, and the Solstice Switch Station upgrade costs are estimated to be $38,457,000.

I. MODERATION OF IMPACT ON THE AFFECTED COMMUNITY AND LANDOWNERS

Q. Do the Commission's rules address routing alternatives intended to moderate the impact on landowners?

A. Yes, 16 TAC § 25.101(b)(3)(B) provides that "the line shall be routed to the extent reasonable to moderate the impact on the affected community and landowners unless grid reliability and security dictate otherwise."

Q. Subsequent to filing the application, have the Applicants made or proposed any routing adjustments to accommodate landowners?

A. I am not aware of any.

Q. Have the Applicants proposed any means to reduce or moderate the impact on landowners of acquiring new ROW for the Proposed Project?

A. Not to my knowledge.

Q. Have any parties to this docket proposed modifications to any route or segments?

A. Not to my knowledge.

Q. Have the Applicants proposed any means to reduce the impact of the Proposed Project on landowners or the affected community other than addressing the requirements of 16 TAC § 25.101(b)(3)(B)?

A. I am not aware of any.

J. RIGHT-OF-WAY

Q. Do the Commission's rules address routing along existing corridors?

A. Yes, 16 TAC § 25.101(b)(3)(B) provides that the following factors are to be considered:

> (i) whether the routes parallel or utilize existing compatible rights-of-way, including the use of vacant positions on existing multiple circuit transmission lines;
>
> (ii) whether the routes parallel or utilize existing compatible rights-of-way;
>
> (iii) whether the routes parallel property lines or other natural or cultural features; and
>
> (iv) whether the routes conform with the policy of prudent avoidance.

1. USE AND PARALLELING OF EXISTING, COMPATIBLE RIGHT-OF-WAY AND APPARENT PROPERTY BOUNDARIES

Q. Please describe how the Applicants proposes to use existing compatible ROW for the Proposed Project.

A. The proposed alternative routes are adjacent to and parallel public roads, highways, and railways from 1.7 to 27.8 miles.[57] Route 24 parallels public roads, highways, and railways for 7.6 miles.[58] In terms of paralleling existing apparent property boundaries, the routes range from 2.0 to 43.7 miles of paralleling.[59] Route 24 parallels property boundaries for 3.6 miles, and none of the proposed routes utilize existing transmission line ROW.[60]

Q. Do any of the proposed routes parallel existing transmission lines?

A. Yes, all of the routes parallel existing transmission lines to some extent.[61] The total length of paralleling of existing transmission lines ranges from 0.0 to 54.4 miles depending on the route.[62] Route 24 parallels existing transmission ROW for 50.4 miles, which is the third highest amount of transmission line paralleling of all the routes. The table below summarizes the data, with routes ordered from greatest to least percentage of existing transmission line paralleling.

Route	Route Length (mi)	Length Paralleling Existing T-line ROW (mi)	Percent of Route Paralleling Existing T-line ROW
1	70.7	53.7	76%
23	73.4	54.4	74%
24	71.1	50.4	71%

[57] EA Table 4-1.
[58] *Id.*
[59] *Id.*
[60] *Id.*
[61] *Id.*
[62] *Id.*

9	78.9	46.2	59%
5	71.7	40.5	56%
7	75.7	41.2	54%
3	69.4	33.8	49%
4	71.1	31.5	44%
8	77.2	31.8	41%
6	74.2	28.9	39%
22	77.0	23.9	31%
12	80.3	24.0	30%
2	67.8	19.9	29%
10	78.7	20.6	26%
13	81.0	17.8	22%
11	75.6	15.8	21%
17	81.4	13.6	17%
18	88.3	14.7	17%
14	81.1	12.6	16%
19	89.3	13.6	15%
21	91.8	10.9	12%
25	82.4	6.9	8%
16	84.1	6.9	8%
15	82.5	0.0	0%
20	89.9	0.0	0%

Q. What is the total amount of paralleling for each route?

A. The total amount of paralleling, as outlined in the EA, is shown in the chart below. Total paralleling is useful because, in my opinion, it provides a more holistic view of how well each alternative route parallels compatible corridors. In addition to accounting for the paralleling and utilization of existing transmission lines, total paralleling also factors in the paralleling of apparent property boundaries, highways/roads, and railroads. As can be seen, each alternative route incorporates paralleling anywhere from 57% to 86% of its length. Routes are listed from descending order of total percent paralleling, and Route 24 incorporates the most amount of paralleling for 86% of its total length.

Route	Route Length (mi)	Total Paralleling (mi)	Total Paralleling (%)
24	71.1	61.5	86%
1	70.7	59.4	84%
9	78.9	64.4	82%
4	71.1	56	79%
23	73.4	58.1	79%
7	75.7	58.3	77%
8	77.2	59.4	77%
12	80.3	62	77%
6	74.2	55.7	75%
13	81	59.8	74%
16	84.1	62.6	74%
19	89.3	66.5	74%
5	71.7	52	72%
10	78.7	56.7	72%
3	69.4	49.5	71%
14	81.1	56.8	70%
15	82.5	57.6	70%
17	81.4	55	68%
2	67.8	43.4	64%
20	89.9	57.3	64%
21	91.8	58.7	64%
22	77	47.4	62%
25	82.4	51	62%
11	75.6	46.3	61%
18	88.3	50.1	57%

2. PRUDENT AVOIDANCE

Q. Please define prudent avoidance.

A. Prudent avoidance is defined by 16 TAC § 25.101(a)(6) as: "The limiting of exposures to electric and magnetic fields that can be avoided with reasonable investments of money and effort."

Q. How can exposure to electric and magnetic fields (EMFs) be limited when routing a transmission line?

A. Primarily by using a route that would minimize, to the extent reasonable, the number of habitable structures located in close proximity to the transmission line.

Q. How many habitable structures are located in close proximity to each of the proposed alternative routes?

A. Table 4-1 of the EA provides the number of habitable structures within 500 feet of the ROW centerline for each alternative route proposed by the Applicants. The table below summarizes this data and is organized from least to greatest number of habitable structures.

Route	Number of Habitable Structures
10	0
12	0
13	0
18	0
19	0
20	0
21	0
22	0
4	2
14	2
15	2
16	2
25	2
24	5
1	5
2	5
8	5
9	5
11	5
5	8
17	8
7	10
3	11

6	11
23	14

As the data show, the total number of habitable structures within 500 feet of the centerline ranges from 0 to 14 based on the specific route. Route 24 has five habitable structures within 500 feet of its centerline.

Q. Route 24 has more habitable structures than 13 other routes. Please explain why this route as a whole is superior to those other routes.

A. All but one of the routes with fewer habitable structures are longer and more expensive than Route 24. Additionally, Route 24 is significantly better than all of these routes when considering the paralleling of existing transmission lines and total paralleling. Generally, these 13 other routes rank lower from an environmental perspective as well. Thus, when considering a number of different factors, Route 24 with its five impacted habitable structures is superior to routes which impact two or no habitable structures.

VI. CONCLUSION

Q. In your opinion, is any one of the proposed alternative routes better than all of the other routes in all respects?

A. No.

Q. If no proposed route is better than all of the others in all respects, why have you recommended Route 24 instead of one of the other routes?

A. After analyzing the factors outlined in PURA § 37.056 and 16 TAC § 25.101, I conclude that Route 24 is the best alternative route because it:

- Is the fourth most economic route, at an estimated cost of $ 155,959,000;

- Is the fourth shortest route at 71.1 miles;
- Utilizes paralleling (including all compatible corridors) more than any other route in terms of percent of total route length paralleling (paralleling 61.5 miles or 86% of its total length);
- Impacts five habitable structures; all routes range from 0 to 14 for this category;[63]
- Is tied with several routes for having the second lowest number of stream crossings at 15;
- Is TPWD's preferred route in terms of minimizing impact to the environment and wildlife;
- Is tied with several other routes as having the least amount of ROW within the foreground visual zone of IH, US, and state highways, at 4.0 miles.

Q. In your opinion, if the Commission considered the factors of PURA, the Commission's substantive rules, and the Preliminary Order in a way that favored any of the other proposed alternative routes over Route 24, do you believe those other proposed alternative routes are viable?

A. Yes.

Q. Does this conclude your testimony?

A. Yes.

[63] EA Table 4-1.

ATTACHMENT BPI-1

Qualifications of Blake P. Ianni

BPI-1 Qualifications of Blake P. Ianni

In December 2012, I graduated from the University of Texas at Austin with a Bachelor of Science in Petroleum Engineering as well as a Certificate in Business Foundations. In May 2016, I earned a Master in Business Administration with a concentration in Engineering & Technology from Texas State University.

Upon completing my undergraduate degree, I worked for Halliburton, an oilfield service company, as a cement engineer in West Texas. In this position, I worked as part of a rapid response team, resolving critical issues to achieve field objectives. My primary duties included creating and managing lab testing requests based on technical specifications and customers' contractual requirements. I was responsible for analyzing and validating lab results and altering the product mix as needed to meet Texas Railroad Commission requirements and Company standards. Additionally, I provided engineering support to the field team, making technical judgement calls and clarifying and investigating any issues related to the pumping job.

In 2014, after a year of working as an associate level engineer (Associate Technical Professional), I was promoted to Technical Professional within the Cement Engineering Department.

In August 2014, I began attending Texas State University. My graduate business coursework emphasized statistical analysis as part of the Engineering & Technology concentration, and I completed my MBA in 2016. I began working in my current role as an Engineering Specialist at the Commission in December 2016.

ATTACHMENT BPI-2

List of Dockets Containing Testimony of Blake P. Ianni

Docket No. 45414
SOAH 473-16-4051
Review of the Rates of Sharyland Utilities, LP, Establishment of Rates for Sharyland Distribution and Transmission Services, LLC, and Request for Grant of a Certificate of Convenience and Necessity and Transfer of Certificate Rights

Docket No. 46449
SOAH 473-17-1764
Application of Southwestern Electric Power Company for Authority to Change Rates

Docket No. 46726
SOAH 473-17-3245
Application of Sharyland Utilities LP to Amend a Certificate of Convenience and Necessity for the Stiles to Coates 138-kV Transmission Line in Reagan

Docket No. 46929
SOAH 473-17-4390
Application of Rayburn County Electric Cooperative, Inc. to Amend its Certificate of Convenience and Necessity for the Dent Road Expansion to Wieland Switch 138-kV Transmission Line in Hunt County, Texas

Docket No. 47003
SOAH 473-17-4267
Application of Entergy Texas, Inc. to Amend its Certificate of Convenience and Necessity for a Proposed 230-kV Transmission Line in Jefferson County

Docket No. 47192
SOAH 473-17-5286
Application of Pedernales Electric Cooperative, Inc. to Amend a Certificate of Convenience and Necessity for the Highway 32 to Wimberley Transmission Line Rebuild and Upgrade Project in Hays County

Docket No. 47462
SOAH 473-18-0626
Application of Entergy Texas, Inc. to Amend its Certificate of Convenience and Necessity for a 230-kV Transmission Line in Montgomery and Walker Counties

Docket No. 47808
SOAH 473-18-1930
Joint Application of Oncor Electric Delivery Company LLC and Brazos Electric Power Cooperative, Inc. to Amend Certificates of Convenience and Necessity for the Cogdell to Clairemont 138-kV Transmission Line in Kent and Scurry Counties

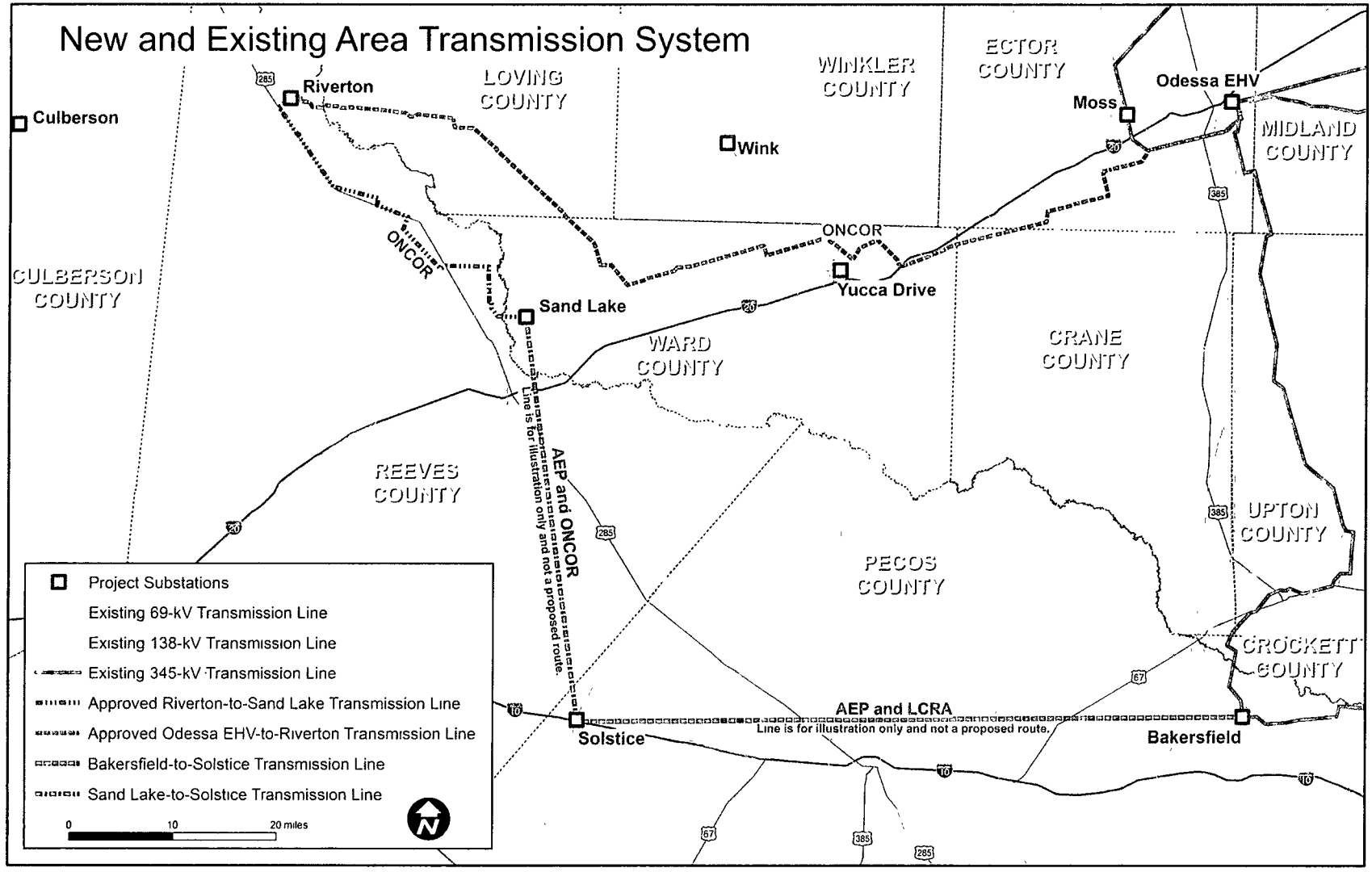
Docket No. 48231
SOAH 473-18-3078
Application of Oncor Electric Delivery Company LLC for a Distribution Cost Recovery Factor

Docket No. 48401
SOAH 473-18-3981
Application of Texas-New Mexico Power Company for Authority to Change Rates

Docket No. 48358
SOAH 473-18-5064
Application of LCRA Transmission Services Corporation to Amend its Certificate of Convenience and Necessity for the Proposed Cooks Point 138-kV Transmission Line Project in Burleson County, Texas

ATTACHMENT BPI-3

Culberson Loop Map— (Attachment BRK-2 in Application)


New and Existing Area Transmission System
Culberson
Riverton
LOVING COUNTY
WINKLER COUNTY
ECTOR COUNTY
Odessa EHV
Moss
MIDLAND COUNTY
Wink
ONCOR
ONCOR
CULBERSON COUNTY
Sand Lake
Yucca Drive
WARD COUNTY
CRANE COUNTY
REEVES COUNTY
AEP and ONCOR
Line is for illustration only and not a proposed route.
UPTON COUNTY
PECOS COUNTY
CROCKETT COUNTY
AEP and LCRA
Line is for illustration only and not a proposed route.
Solstice
Bakersfield
Project Substations
Existing 69-kV Transmission Line
Existing 138-kV Transmission Line
Existing 345-kV Transmission Line
Approved Riverton-to-Sand Lake Transmission Line
Approved Odessa EHV-to-Riverton Transmission Line
Bakersfield-to-Solstice Transmission Line
Sand Lake-to-Solstice Transmission Line
0 10 20 miles
N

ATTACHMENT BPI-4

TPWD Letter to Karen Hubbard

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Carter P. Smith
Executive Director

December 14, 2018

Ms. Karen Hubbard
Public Utility Commission of Texas
P.O. Box 13326
Austin, TX 78711-3326

RE: PUC Docket No. 48787: Joint Application of LCRA Transmission Services Corporation and AEP Texas, Inc. to Amend their Certificates of Convenience and Necessity for the Proposed Bakersfield to Solstice 345-kilovolt Transmission Line Project in Pecos County, Texas

Dear Ms. Hubbard:

Texas Parks and Wildlife Department (TPWD) has received the Environmental Assessment (EA) and Alternative Routes Analysis regarding the above-referenced proposed transmission line project. TPWD offers the following comments and recommendations concerning this project.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife (TPW) Code, Section 12.0011. For tracking purposes, please refer to TPWD project number 40976 in any return correspondence regarding this project.

Project Description

LCRA Transmission Services Corporation (LCRA TSC) and American Electric Power, Texas Inc. (AEP Texas) propose to build a new double-circuit 345-kilovolt (kV) transmission line in Pecos County. LCRA TSC will construct, own, operate, and maintain the eastern half of the transmission line connecting to LCRA TSC's Bakersfield Station and AEP Texas will construct, own, operate, and maintain the western half of the transmission line connecting to AEP Texas' Solstice Switch Station. The new transmission line will range from approximately 67.8 to 91.7 miles long, depending on the route ultimately selected by the Public Utility Commission of Texas (PUC). The proposed project also involves construction of interconnection facilities at the existing Bakersfield Station and constructing a 345-kV expansion station adjacent to the existing 138-kV Solstice Switch Station.

The transmission line will be installed on new steel lattice tower structures within new easements. The new double-circuit 345-kV transmission facilities will typically be constructed on new right-of-way (ROW) within easements approximately 150 feet in width, and using typical spans that range from approximately 900 to 1,500 feet. In some areas, actual spans could be more or less than the typical estimated spans, depending upon terrain and other engineering

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15

constraints. Easement widths could also vary to address similar concerns. Access easements and/or temporary construction easements may be needed in some areas.

Previous Coordination

TPWD provided information and recommendations regarding the preliminary study area for this project to POWER Engineers, Inc. (POWER) on March 9, 2018. This response was included in Appendix A of the EA.

> **Recommendation:** Please review previous TPWD correspondence and consider the recommendations provided, as they remain applicable to the project as proposed.

Proposed Alternative Routes

LCRA TSC/AEP Texas' Recommended Route

POWER, LCRA TSC, and AEP Texas identified a total of 25 primary alternative routes for comparison that utilize all of the alternative route segments at least once and also provide geographic diversity. POWER professionals with expertise in different environmental disciplines (geology/soils, hydrology, terrestrial ecology, wetland ecology, land use/aesthetics, socioeconomics, and cultural resources) and Geographic Information Systems (GIS) evaluated the routes based upon environmental conditions present along each route (augmented by aerial photo interpretation and field reconnaissance) and the general routing criteria developed by LCRA TSC, AEP Texas, and POWER. The evaluation of the routes involved quantifying 46 land use and environmental criteria.

Upon evaluation of the primary alternative routes, LCRA TSC and AEP Texas selected Route 24 as the primary alternative route that the joint applicants believe best addresses the requirements of Public Utility Regulatory Act (PURA) and the PUC's Substantive Rules. The Certificate of Convenience and Necessity (CCN) application included the following information outlining the factors that contributed to their selection of Route 24:

- *Route 24 has the highest percentage paralleling and adjacent to existing corridors (transmission lines, public roads/highways and apparent property boundaries) for approximately 86 percent of its total estimated length (61.5 miles of 71.1 miles);*
- *Route 24 has a significant portion of length parallel and adjacent to an existing transmission line currently being rebuilt from 69-kV to 138-kV which will decrease the amount of new disturbance;*

- *Route 24 has the 4th shortest length (along with Route 4) of the 25 primary alternative routes included in the CCN (approximately 71.1 miles) and is only 3.3 miles longer than the shortest route;*
- *Route 24 has a relatively low cost, as the 4th lowest cost of the 25 primary alternative routes included in the CCN (approximately $155,960,000);*
- *Route 24 has a relatively lower habitable structure count of 5 (habitable structures range from 0 to 14);*
- *Route 24 has a relatively low overall aesthetic impact;*
- *Route 24 crosses two recorded cultural resources sites and has two additional recorded resources sites located within 1,000 feet of the centerline;*
- *Route 24 has only 34 pipeline crossings (pipeline crossings range from 20 to 46).*

TPWD's Recommended Route

To evaluate the potential impacts to fish and wildlife resources, 18 criteria from Table 4-1 in the EA were used. The criterion TPWD used to evaluate potential impacts to fish and wildlife resources included:

- Length of primary alternative route;
- Length of ROW using existing transmission line ROW;
- Length of ROW parallel and adjacent to existing transmission line ROW;
- Length of ROW parallel and adjacent to other existing ROW (roadways, railways, etc.);
- Length of ROW across parks/recreational areas;
- Number of additional parks/recreational areas within 1,000 feet of ROW centerline;
- Length of ROW across University Lands;
- Length of ROW through cropland;
- Length of ROW through pasture/rangeland;
- Length of ROW through upland woodlands/brushland;
- Length of ROW through bottomland/riparian woodlands;
- Length of ROW across National Wetlands Inventory (NWI) mapped wetlands;
- Length of ROW across known habitat of federally-listed endangered or threatened species (as defined in the EA);
- Length of ROW across open water (lakes, ponds);
- Number of stream crossings;
- Number of river crossings;
- Length of ROW parallel (within 100 feet) to streams or rivers;

- Length of ROW across 100-year floodplain.

TPWD typically recommends that transmission line routes be located adjacent to previously disturbed areas such as existing utility or transportation ROWs and discourages fragmenting habitat or locating in areas that could directly negatively impact wildlife, including listed species. After careful evaluation of the 25 routes filed with the CCN application, TPWD selected Route 24 as the route having the least-potential to impact fish and wildlife resources. The decision to recommend Route 24 was based primarily on the following factors:

- Route 24 is the 4th shortest route at 71.1 miles (the shortest route is 67.8 miles);
- Approximately 81 percent of Route 24 is parallel and adjacent to existing transmission line ROW and other existing ROW (roads, railways, etc.);
- Route 24 does not cross any parks and there are no additional parks or recreational areas within 1,000 feet of the ROW centerline;
- Route 24 does not cross any University Lands;
- Route 24 only crosses 0.26 mile of bottomland/riparian woodlands;
- Route 24 does not cross any NWI mapped wetlands;
- Route 24 does not cross any known habitat of federally-listed threatened and endangered species (as defined in the EA);
- Route 24 does not cross any open water (lakes, ponds);
- Route 24 contains the 2nd fewest number of stream crossings at 15 stream crossings (with the least being 13 stream crossings);
- Route 24 does not cross any rivers;
- Only 0.4 mile of Route 24 runs parallel (within 100 feet) to streams or rivers;
- Route 24 does not cross any 100-year floodplain.

TPWD notes that Route 24 would cross six Texas Natural Diversity Database (TXNDD) records. Route 24 crosses two TXNDD records for the kit fox (*Vulpes macrotis*), which is considered a rare species tracked by TPWD. The dates of these two observations range from 1971 to 1979. Route 24 also crosses one TXNDD record for alkali spurge (*Euphorbia astyla*); this plant is also considered to be a rare species tracked by TPWD and the date of this rare plant observation is from 1984. Route 24 crosses one TXNDD record for the Pecos River muskrat (*Ondatra zibethicus ripensis*), also a rare species tracked by TPWD and the last observation date is unknown; however, the observation was transcribed in 1996.

Route 24 would also cross one TXNDD record for the federally- and state-listed threatened Pecos sunflower (*Helianthus paradoxus*) and one TXNDD record for the federally- and state-listed endangered Leon Springs pupfish (*Cyprinodon*

bovinus). Both of these records are located in the vicinity of Leon Creek. The dates of these two observations range from 1974 to 1976. Section 4.1.3.1 (page 4-11) of the EA states, "If surface waters are crossed, the proposed transmission line will span all surface water crossings, with the structure foundations located outside of the ordinary high water lines." Therefore, TPWD does not anticipate direct impacts to Leon Creek from the construction of the proposed transmission line project.

The EA did not provide sufficient information based on surveys (aerial or field), remote sensing, modeling, or other available analysis techniques to determine which route would best minimize impacts to important, rare, and protected species. Therefore, the routing recommendation below is based solely on the natural resource information provided in the CCN application and the EA, as well as publicly available information examined in GIS.

Recommendation: Of the routes evaluated in the EA, Alternative Route 24 appears to best minimize adverse impacts to natural resources while also maintaining a shorter route length and paralleling existing corridors for more than half of the route length. TPWD recommends the PUC select a route that would minimize adverse impacts to natural resources, such as Alternative Route 24.

Construction Recommendations

General Construction Recommendations

Recommendation: TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife from the construction area. In many cases, sediment control fence placement for the purposes of controlling erosion and protecting water quality can be modified minimally to also provide the benefit of excluding wildlife access to construction areas. The exclusion fence should be buried at least six inches and be at least 24 inches high. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated. Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities. TPWD recommends that any open trenches or excavation areas be covered overnight and/or inspected every morning to ensure no wildlife species have been trapped. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Also, inspect excavation areas for trapped wildlife prior to refilling.

Recommendation: For soil stabilization and/or revegetation of disturbed areas within the proposed project area, TPWD recommends erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. Because the mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, TPWD recommends the use of no-till drilling, hydromulching and/or hydroseeding due to a reduced risk to wildlife. If erosion control blankets or mats will be used, the product should contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting should be avoided.

Federal Law: Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits direct and affirmative purposeful actions that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The U.S. Fish and Wildlife Service (USFWS) Migratory Bird Office can be contacted at (505) 248-7882 for more information on potential impacts to migratory birds.

Section 4.1.4.2 (page 4-15) of the EA states, "Structure design and other mitigation measures can be implemented to minimize the risk for electrocution and/or collisions of birds with overhead powerline facilities. The danger of electrocution to birds as a result of the Proposed Project will be insignificant since the distance between conductors, from conductor to structure, and from conductor to ground wire for the proposed 345-kV transmission line is greater than the wingspan of any bird in the area. The structures and wires of the line could be a collision hazard to birds in flight. Normally, migratory birds fly at altitudes exceeding the tower structure heights proposed for the project and would be at risk only during periods of migratory fallout (inclement weather and/or high opposing direction winds forcing them to lower altitudes)."

Recommendation: To prevent electrocution of perching birds, TPWD recommends utilizing avian-safe designs that provide appropriate separation between two energized phases or between an energized phase and grounded equipment. TPWD recommends covering energized components with appropriate bird protection materials where adequate spacing cannot be achieved, such as installing insulated jumper wires, insulator covers, bushing caps, and arrester caps. TPWD recommends that lines that cross or are located near rivers, creeks, drainages, wetlands, and lakes have line markers

installed at the crossings or closest points to the drainages to reduce potential collisions by birds flying in the vicinity of water features. For additional information, please see the guidelines published in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012.*

Section 4.1.4.2 (page 4-15) of the EA states, "If ROW clearing occurs during the nesting season, potential impacts could occur within the ROW area related to potential take of migratory bird eggs and/or nestlings. Increases in noise and activity levels during construction could also potentially disturb breeding or other activities of species nesting in areas immediately adjacent to the ROW."

Recommendation: If migratory bird species are found nesting on or adjacent to the project area, they must be dealt with in a manner consistent with the MBTA. TPWD recommends excluding vegetation clearing activities during the general bird nesting season, March 15 through September 15, to avoid adverse impacts to breeding birds. If clearing vegetation during the migratory bird nesting season is unavoidable, TPWD recommends surveying the area proposed for disturbance, as close to the date of construction as possible, to ensure that no nests with eggs or young will be disturbed by operations. TPWD recommends that a 150-foot buffer of vegetation remain around any nests that are observed prior to disturbance. Any vegetation (such as trees, shrubs, and grasses) or other open areas where occupied nests are located should not be disturbed until the eggs have hatched and the young have fledged.

Federal Law: Endangered Species Act

Federally-listed animal species and their habitats are protected from "take" on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is "incidental" to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally-listed plants are not protected from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the USFWS is a violation of the ESA.

Pecos sunflower (*Helianthus paradoxus*)

Section 2.2.5.4 (page 2-30) of the EA states, "The Pecos sunflower is a federally-listed endangered species that is typically restricted to saline soils of permanently wet desert marshes. This species is only found in Pecos and Reeves counties as well as in five counties in New Mexico and flowers from August to November.

Designated Critical Habitat for this species, if found within the study area, was previously identified along Leon Creek. TXNDD (2018) data identified six occurrences of this species within moist habitats in the study area. This species may occur within the study area where suitable habitat is found."

> **Recommendation:** TPWD recommends the PUC-selected route be surveyed for the Pecos sunflower where suitable habitat may be present, prior to construction. The survey should be performed by a qualified biologist at the time of year when the species is most likely to be found, usually during the species flowering period. If this species is present, plans should be made to avoid adverse impacts to the greatest extent possible. If plants are found in the path of construction, including the placement of staging areas and other project related sites, this office should be contacted for further coordination and possible salvage of plants and/or seeds for seed banking. Plants not in the direct path of construction should be protected by markers or fencing and by instructing construction crews to avoid any harm. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for this federally-listed plant.

Pecos gambusia (*Gambusia nobilis*)

Section 2.2.5.4 (page 2-35) of the EA states, "The Pecos gambusia is a small species of fish endemic to spring-fed pools and marshes with constant temperature in west Texas and southeast New Mexico. In Texas, this species is found in Jeff Davis and Pecos counties, with the only known locations in aquatic habitats near the City of Balmorhea, Texas and within Leon Creek and Diamond Y Spring outflow north of the City of Fort Stockton. TXNDD (2018) data identified an occurrence of this species at this location. These habitats were mapped using GIS and avoided during the routing process. This species may occur within the study area along Diamond Y Springs and Leon Creek where suitable habitat is found."

Diamond tryonia (*Tryonia adamantina*)

Section 2.2.5.4 (pages 2-35 and 2-36)) of the EA states, "The Diamond tryonia is a small species of aquatic mollusk endemic to Pecos County. This species is only known to occur at Diamond Y Spring and Leon Creek, north of the City of Fort Stockton. TXNDD (2018) data identified an occurrence of this species at this location. USFWS Critical Habitat has been designated at these locations. These habitats were mapped using GIS and avoided during the routing process. This species occurs in mud substrates on the margins of springs and in flowing water of marshes associated with sedges and cattails. This species may occur within the study area along Diamond Y Springs and Leon Creek where suitable habitat is found."

Leon Springs pupfish (*Cyprinodon bovinus*)

Section 2.2.5.4 (page 2-35) of the EA states, "The Leon Springs pupfish is a small species of fish endemic to natural spring-fed slow-flowing water, marshes, and pools in Pecos County. This species is only known to occur at Diamond Y Spring and Leon Creek, north of the City of Fort Stockton. TXNDD (2018) data identified three occurrences of this species at this location. USFWS Critical Habitat has been designated at these locations. These habitats were mapped using GIS and avoided during the routing process. This species is typically found on the margins of spring-fed marsh pools, away from vegetation. This species may occur within the study area along Diamond Y Springs and Leon Creek where suitable habitat is found."

Gonzales tryonia (*Tryonia circumstriata*)

Section 2.2.5.4 (page 2-36) of the EA states, "The Gonzales tryonia is a small species of aquatic mollusk endemic to Pecos County. This species is only known to occur at Diamond Y Spring and Leon Creek, north of the City of Fort Stockton. TXNDD (2018) data identified an occurrence of this species at this location. USFWS Critical Habitat has been designated at these locations. These habitats were mapped using GIS and avoided during the routing process. This species occurs in mud substrates on the margins of springs and in flowing water of marshes associated with sedges and cattails. This speciesmay occur within the study area along Diamond Y Springs and Leon Creek where suitable habitat is found."

Pecos assiminea snail (*Assiminea pecos*)

Section 2.2.5.4 (page 2-36) of the EA states, "The Pecos assiminea snail is a small species of semi-aquatic snail endemic to the Pecos River Valley of New Mexico and Texas. This species is now known only to occur at Diamond Y Spring and Leon Creek, north of the City of Fort Stockton. TXNDD (2018) data identified an occurrence of this species at this location. USFWS Critical Habitat has been designated at these locations. These habitats were mapped using GIS and avoided during the routing process. This species is typically found on moist ground or beneath emergent vegetation near slow moving water. This species may occur within the study area along Diamond Y Springs and Leon Creek where suitable habitat is found."

Ms. Karen Hubbard
Page 10 of 20
December 14, 2018

Pecos amphipod (*Gammarus pecos*)

Section 2.2.5.4 (page 2-34) of the EA states, "The Pecos amphipod is a small species of aquatic amphipod endemic to two locations in Pecos County, Texas. This species is only known to occur at Diamond Y Spring and Leon Creek, north of the City of Fort Stockton. USFWS Critical Habitat has been designated at these locations. These habitats were mapped using GIS and avoided during the routing process. This species may occur within the study area along Diamond Y Springs and Leon Creek where suitable habitat is found."

Recommendation: TPWD recommends taking measures to avoid impacts to aquatic and riparian habitats (specifically Leon Creek), which would help minimize impacts to the above-listed federally-protected aquatic species (as well as other aquatic species that may inhabit the project area). All waterways in the project area should be spanned, and care should be taken to avoid multiple crossings of creeks and rivers or installing lines parallel to waterways and therefore removing large sections of riparian habitat. River and creek crossings should be located in previously disturbed areas to avoid further fragmentation of the riparian corridors associated with these waterways. TPWD also recommends implementing best management practices (BMPs) to prevent erosion and sedimentation into waterways. Erosion and sediment control measures include temporary or permanent seeding (with native plants), mulching, earth dikes, silt fences, sediment traps, and sediment basins. Examples of post-construction BMPs include vegetation systems (biofilters) such as grass filter strips and vegetated swales as well as retention basins capable of treating any additional runoff. Please also refer to the *General Construction Recommendations* section of this letter for erosion and seed/mulch stabilization materials TPWD recommends utilizing and avoiding. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for these federally-listed aquatic species.

State Law: Parks and Wildlife Code – Chapter 64, Birds

TPW Code Section 64.002, regarding protection of nongame birds, provides that no person may catch, kill, injure, pursue, or possess a bird that is not a game bird. TPW Code Section 64.003, regarding destroying nests or eggs, provides that, no person may destroy or take the nests, eggs, or young and any wild game bird, wild bird, or wild fowl. TPW Code Chapter 64 does not allow for incidental take and therefore is more restrictive than the MBTA.

Recommendation: Please review the *Federal Law: Migratory Bird Treaty Act* section above for recommendations as they are also applicable for Chapter 64 of the Parks and Wildlife Code compliance.

State Law: Parks and Wildlife Code – Section 68.015

Section 68.015 of the TPW Code regulates state-listed species. Please note that there is no provision for the capture, trap, take, or kill (incidental or otherwise) of state-listed species. *TPWD Guidelines for Protection of State-Listed Species* includes a list of penalties for take of species. State-listed species may only be handled by persons with authorization obtained through TPWD. For more information on this permit, please contact the Wildlife Permits Office at (512) 389-4647.

Texas horned lizard (*Phrynosoma cornutum*)

As stated in Section 2.2.5.4 (page 2-38) of the EA, "The Texas horned lizard population has decreased due to collection, land use conversions, habitat loss, and increased fire ant populations. The Texas horned lizard inhabits a variety of habitats including open desert, grasslands, and shrubland in arid and semiarid habitats that contain bunch grasses, cacti, and yucca on soils varying from pure sands and sandy loams to coarse gravels, conglomerates, and desert pavements. Their primary prey item is the harvester ant (*Pogonomyrmex* spp.), but they may also consume grasshoppers, beetles, and grubs. The Texas horned lizard thermo-regulates by basking or burrowing into the soil and is active (not hibernating) between early spring to late summer. This species may occur within the study area where suitable habitat is available."

Recommendation: TPWD recommends having a permitted biologist survey the PUC-selected route for any Texas horned lizards that may be in the area that is proposed for disturbance. As previously mentioned, a useful indication that the Texas horned lizard may occupy the site is the presence of harvester ant nests. The survey should be performed during the warm months of the year when the Texas horned lizards are active. If Texas horned lizards are found on-site, TPWD recommends relocating individuals off-site to a nearby area and that contains similar habitat. For projects where the disturbance is linear (county and state roads and highways, pipelines, and transmission lines) and after Texas horned lizard removal, TPWD recommends that fencing be installed to exclude Texas horned lizards and other reptiles from entering the active construction area and project specific locations or staging areas.

The exclusion fence should be constructed and maintained as follows:

a. The exclusion fence should be constructed with metal flashing or drift fence material.
b. Rolled erosion control mesh material should not be used.
c. The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
d. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated.
e. Any open trenches or excavation areas should be covered overnight and/or inspected every morning to ensure no Texas horned lizards or other wildlife have been trapped. For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Also, inspect excavation areas for trapped wildlife prior to refilling.

Recommendation: If the PUC-selected route cannot avoid suitable habitat of the Texas horned lizard, then TPWD recommends a permitted biological monitor be present during clearing and construction activities to relocate Texas horned lizards encountered during construction. TPWD also recommends providing contractor training where feasible. Because the biological monitor cannot oversee all construction activity at the same time, it's important for the contractor to be able to identify protected species and to be on the lookout for them during construction. TPWD also recommends avoiding impacts to harvester ant mounds where feasible. TPWD understands that ant mounds in the direct path of construction would be difficult to avoid, but contractors should be mindful of these areas when deciding where to place project specific locations and other disturbances associated with construction.

Recommendation: If the presence of a biological monitor during construction is not feasible, state-listed species observed during construction should be allowed to safely leave the site or be relocated by a permitted individual to a nearby area with similar habitat that would not be disturbed during construction. TPWD recommends that any translocations of reptiles be the minimum distance possible no greater than one mile, preferably within 100 to 200 yards from the initial encounter location. A mixture of cover, food sources, and open ground is important to the Texas horned lizard and the harvester ant. Disturbed areas within suitable habitat for the Texas horned lizard should be re-vegetated with site-specific native, patchy vegetation rather than sod-forming grasses.

Ms. Karen Hubbard
Page 13 of 20
December 14, 2018

Black Bear (*Ursus americanus*)

As stated in Section 2.2.5.4 (page 2-39) of the EA, "The American black bear historically inhabited various habitats throughout Texas and was once thought to be extirpated from the state. In recent years sightings have increased near the Chisos Mountains in west Texas and the Texas Panhandle from bears dispersing from rugged terrain in Mexico and New Mexico. This species may occur within the study area where suitable habitat is found."

Recommendation: TPWD recommends avoiding mesic hardwood forests and long tracts of intact forested land when constructing the proposed project. TPWD also recommends avoiding disturbance of food sources for the black bear such as mast producing trees, prickly-pear fruits, and hearts of Spanish dagger, sotol, and yucca. If a Black bear is observed during field reconnaissance, windshield surveys, or construction, TPWD recommends reporting the black bear sighting to TPWD mammalogist Jonah Evans at (830) 249-2131.

Trans-Pecos black-headed snake (*Tantilla cucullata*)

As stated in Section 2.2.5.4 (page 2-38) of the EA, "The Trans-Pecos black-headed snake habitat may occur on steep and rocky substrates in mesquite-creosote or pinyon-juniper-oak habitats of west Texas. This species is mostly nocturnal and lays its eggs between June and August. TXNDD (2018) data identified an occurrence of this species in the eastern half of the study area. This species may occur within the study area where suitable habitat is available."

Recommendation: Snakes are generally perceived as a threat and killed when encountered during clearing or construction. Therefore, TPWD recommends that personnel involved in clearing and construction be informed of the potential for the Trans-Pecos black-headed snake to occur in the project area. Personnel should be advised to avoid impacts to this snake as it is non-venomous and poses no threat to humans. TPWD recommends a permitted biological monitor be present during construction to try to relocate protected species if found (to an area that is nearby with similar habitat). TPWD recommends that any translocations of reptiles be the minimum distance possible no greater than one mile, preferably within 100 to 200 yards from the initial encounter location. If the presence of a permitted biological monitor during construction is not feasible, state-listed species observed during construction should be allowed to safely leave the site.

Ms. Karen Hubbard
Page 14 of 20
December 14, 2018

Rare Species

In addition to state- and federally-protected species, TPWD tracks special features, natural communities, and rare species that are not listed as threatened or endangered. These species and communities are tracked in the TXNDD, and TPWD actively promotes their conservation. TPWD considers it important to evaluate and, if necessary, minimize impacts to rare species and their habitat to reduce the likelihood of endangerment and preclude the need to list as threatened or endangered in the future.

TPWD notes that the EA did not include information on rare plants that may be present within the study area or potentially impacted by the proposed project.

There are TXNDD record(s) for the following rare plants located within the study area:

- Bigelow's desert grass *(Blepharidachne bigelovii)*
- Cienega false clappia-bush *(Pseudoclappia arenaria)*
- Wright's trumpets *(Acleisanthes wrightii)*
- Alkali spurge *(Chamaesyce astyla)*
- Bushy wild-buckwheat *(Eriogonum suffruticosum)*
- Correll's green pitaya *(Echinocereus viridiflorus var correllii)*
- Havard trumpets *(Acleisanthes acutifolia)*
- Tharp's blue-star *(Amsonia tharpii)*
- Leafy rock-daisy *(Perityle rupestris var. rupestris)*
- Longstalk heimia *(Nesaea longipes)*
- Grayleaf rock-daisy *(Perityle cinerea)*
- White column cactus *(Escobaria albicolumnaria)*
- Leoncita false foxglove *(Agalinis calycina)*
- Rayless rock-daisy *(Perityle angustifolia)*
- Wright's water-willow *(Justicia wrightii)*

Recommendation: TPWD recommends reviewing the TPWD Rare, Threatened, and Endangered Species of Texas by County List (TPWD county list) for Pecos County, as rare plant species in addition to those listed above could be present, depending upon habitat availability. TPWD recommends surveying the PUC-selected route for the above-listed species (or any rare plants that may potentially be impacted by the proposed project) where suitable habitat may be present, prior to construction. The survey should be performed by a qualified biologist at the time of year when the species is most likely to be found, usually during their respective flowering period. If any rare plant species are present, plans should be made to avoid adverse impacts to

the greatest extent possible. If plants are found in the path of construction, including the placement of staging areas and other project related sites, this office should be contacted for further coordination and possible salvage of plants and/or seeds for seed banking. Plants not in the direct path of construction should be protected by markers or fencing and by instructing construction crews to avoid any harm.

Black-tailed prairie dog (*Cynomys ludovicianus*)

Table 2-6 in the EA lists the black-tailed prairie dog as a mammalian species potentially occurring within the study area. Black-tailed prairie dogs inhabit dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. The black-tailed prairie dog is a keystone species that provides food and/or shelter for rare species tracked by TPWD such as the ferruginous hawk and the western burrowing owl, as well as many other wildlife species.

Recommendation: TPWD recommends surveying the PUC-selected route for prairie dog towns or burrows and species that depend on them. If prairie dog towns or burrows are found in the area proposed for disturbance, TPWD recommends avoiding these areas during construction and installing exclusion fence to keep prairie dogs from entering the project area. If prairie dog burrows will be disturbed as a result of the proposed project, TPWD recommends non-harmful exclusion methods be used to encourage the animals to vacate the area prior to disturbance and discourage them from returning to the area during construction. If prairie dogs are encountered on the project site, TPWD recommends contacting a prairie dog relocation specialist. If impacting a portion of a larger colony, time relocation efforts and/or humane removal immediately before construction to discourage recolonization of the project area. Prairie dogs can be encouraged to move away from a project area by mowing overgrown adjacent areas. Conversely, prairie dogs can be discouraged from utilizing areas by not mowing and allowing grass or other tall vegetation to grow or by scraping all vegetation off the project site and leaving soil exposed.

Western burrowing owl (*Athene cunicularia hypugaea*)

Table 2-5 in the EA lists the western burrowing owl as a bird species potentially occurring within the study area. The western burrowing owl is a ground-dwelling owl that uses the burrows of prairie dogs and other fossorial animals for nesting and roosting. When natural burrows are limited, this species will breed in urban habitats which may lead to problems for the owls or their young. The owls opportunistically live and nest in road and railway ROWs, parking lots, baseball

fields, school yards, golf courses, and airports. They have also been found nesting on campuses, in storm drains, drainage pipes, and cement culverts, on banks, along irrigation canals, under asphalt or wood debris piles, or openings under concrete pilings or asphalt. The burrowing owl is protected under the MBTA, and take of these birds, their nests, and eggs is prohibited. Potential impacts to the burrowing owl could include habitat removal as well as displacement and/or destruction of nests and eggs if ground disturbance occurs during the breeding season.

> **Recommendation:** As previously mentioned, TPWD recommends surveying the PUC-selected route for prairie dog or other mammal burrows prior to construction. If mammal burrows or other suitable habitat would be disturbed as a result of the proposed project, TPWD recommends they be surveyed for burrowing owls. If nesting owls are found, disturbance should be avoided until the eggs have hatched and the young have fledged.

Cave myotis bat (*Myotis velifer*)

Table 2-6 in the EA lists the cave myotis bat as a mammalian species potentially occurring within the study area.

Adverse impacts, such as habitat loss, to bats are being compounded due to a deadly disease known as white-nose syndrome (WNS). This disease is associated with the fungus, *Pseudogymnoascus destructans*, which appears to impact certain species of hibernating bats and frequently results in death of the infected bats. This fungus has wiped out entire colonies of hibernating bats in states east of Texas. As of April 2018, the fungus that causes WNS has been detected in ten Texas Counties. Bats appear to spread WNS among colonies and roosts; however there is evidence that humans can transport the fungus on their shoes, gear, and clothing after entering infected bat caves and roosts. TPWD is concerned that WNS could be spread by personnel or consultants working on development projects in states where WNS has been detected, and then inadvertently bring the fungus to Texas on gear or clothing that has not been properly decontaminated.

To determine the appropriate BMP to avoid or minimize impacts to bats, review the habitat description for the cave myotis bat on the TPWD county list or other trusted resources. All bat surveys and other activities that include direct contact with bats shall comply with TPWD-recommended white-nose syndrome protocols located on the TPWD Wildlife Habitat Assessment Program website under "Project Design and Construction".

The following survey and exclusion protocols should be followed prior to commencement of construction activities. For the purposes of this letter, structures

are defined as bridges, culverts (concrete or metal), wells, and buildings. For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist should perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before construction is scheduled to begin.

Recommendation: TPWD recommends surveying the PUC-selected route for potential bat habitat. Surveys should be conducted by a qualified biologist to determine roost site potential and occupancy. Bat surveys of structures/features should include visual inspections for the presence of bats. If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction. For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.

Recommendation: For exclusion of bats, TPWD recommends locating and sealing the entrances through which bats make ingress/egress. Before excluding bats from any occupied structure/feature, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, 1) bats are absent or 2) present but active (i.e. continuously active – not intermittently active due to arousals from hibernation). Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, install alternate roosts to mitigate for the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.

Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F and minimum daytime temperatures are above 70°F. TPWD offers the following best-practices regarding bat exclusion devices and activities:

- Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes.
- Avoid using products or making structural modifications that may block natural ventilation, like hanging plastic sheeting over an active roost entrance, thereby altering roost microclimate.

- Avoid using chemical and ultrasonic repellents.
- Avoid use of silicone, polyurethane or similar non-water-based caulk products.
- Avoid use of expandable foam products at occupied sites
- Avoid the use of flexible netting attached with duct tape.
- In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications:
  - Experience in bat exclusion (the individual, not just the company).
  - Proof of rabies pre-exposure vaccinations.
  - Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements.
  - Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts.
- Contact TPWD for additional resources and information to assist in executing successful bat exclusions that will avoid unnecessary harm or death in bats.

Western spotted skunk *(Spilogale gracilis)*

Table 2-6 in the EA lists the western spotted skunk as a mammalian species potentially occurring within the study area. The western spotted skunk can be found in open fields, prairies, croplands, fence rows, forest edges, and woodlands.

Western hog-nosed skunk (*Conepatus leuconotus*)

Table 2-6 in the EA lists the western hog-nosed skunk as a mammalian species potentially occurring within the study area. The western hog-nosed skunk inhabits a wide variety of habitats within its range, including woodlands, grasslands, deserts, brushy areas, and rocky canyons in mountainous regions. Dens are in rock crevices, hollow logs, underground burrows, caves, mine shafts, woodrat houses, or under buildings.

Kit fox (*Vulpes macrotis*)

Table 2-6 in the EA lists the kit fox as a mammalian species potentially occurring within the study area. This species primarily inhabits open desert, shrubby or shrub-grass habitat.

Pecos River muskrat (*Ondatra zibethicus ripensis*)

Table 2-6 in the EA lists the Pecos River muskrat as a mammalian species potentially occurring within the study area. This species is found near creeks, rivers, lakes, drainage ditches, and canals and prefers shallow, fresh water with clumps of marshy vegetation, such as cattails, bulrushes, and sedges.

> **Recommendation:** If any of the above-listed rare mammal species are encountered during construction, TPWD recommends that precautions be taken to avoid impacts to them.

Texas Natural Diversity Database

The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Absence of information in the database does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for field surveys. The TXNDD is updated continuously based on new, updated and undigitized records; therefore, TPWD recommends requesting the most recent TXNDD data on a regular basis. For questions regarding a record or to request the most recent data, please contact TexasNatural.DiversityDatabase@tpwd.texas.gov.

> **Recommendation:** To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting all encounters of rare, state-listed, and federally-listed species to the TXNDD according to the data submittal instructions found on the TXNDD website.

I appreciate the opportunity to review and comment on this EA. Please contact me at (512) 389-8054 or Jessica.Schmerler@tpwd.texas.gov if you have any questions.

Sincerely,

Jessica E. Schmerler

Jessica E. Schmerler

Ms. Karen Hubbard
Page 20 of 20
December 14, 2018

Wildlife Habitat Assessment Program
Wildlife Division

JES:jn.40976

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